

Editorial

Large Transport Infrastructure Projects: Improving
Institutions and Decision Making**Bert van Wee¹**

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In recent years the subject of decision making on large transport infrastructure projects and related institutional issues have received much attention in the academic and professional literature, partly triggered by the book *Megaprojects and Risk* (Flyvbjerg *et al.*, 2003). This book shows that for large infrastructure projects cost overruns and demand shortfalls are very common, and that institutional factors play an important role in this being the case. Recent academic contributions include special issues in *Environment and Planning B* (2007) and *Transportation Planning and Technology* (2007) and the book '*Decision-making on mega projects. Cost-benefit analysis, planning and innovation*' (Priemus *et al.*, 2008).

Wednesday 12 November 2008 as part of the two days NGI/IEEE conference 'infrastructure systems' in Rotterdam, the Netherlands, a special session was organized, titled '*Large Transport Infrastructure Projects: improving institutions and decision making*'. The session aimed (1) to add to the literature by exploring what is behind the insights into cost overruns and demand shortfalls, in particular by focusing on theoretical insights and in-dept cases, and (2) to contribute to solving current problems and improve current practice with respect to decision making and institutions. We hope the papers help fill the research gaps in these areas. This special issue of the *European Journal of Transport and Infrastructure Research* (EJTIR) gives an overview of a selection of papers of that session.

The paper by Cantarelli, Flyvbjerg, Molin, and Van Wee deepens the literature on explanations for cost overruns, and links such explanations to a range of theories. The authors distinguish between four categories of explanations: technical, economic, psychological, and political, and conclude that political explanations are seen as dominant in accounting for cost overruns. Next the paper explores which theories are useful to understand these four categories of explanations. Agency theory is considered the most interesting for understanding political explanations and an eclectic theory is also considered possible. Non-political explanations are so diverse in character,

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that a range of different theories (including rational choice theory and prospect theory) is considered more appropriate to understand these explanations than one all-embracing theory.

Priemus' paper covers decision-making for mega projects. According to Priemus the well-described problems of cost overruns and demand shortfalls are generated already in the initial stages of the decision-making process by the absence of an appropriate problem analysis, the lack of alternatives, ambiguities about scope, no programme of functional requirements, flawed process architecture and the dissemination of contested information. The paper provides an overview of the impact of market dynamics and political discontinuity (which are sometimes interrelated) on decision-making on mega-projects. It analyses these impacts and it attempts to determine ways in which project managers could deal with them. One of the conclusions is that the identification and allocation of risks among public and private players is a crucial variable. Lessons to prevent or reduce flaws learned from past experience include: strengthen the knowledge base of the project; stimulate learning processes during the decision-making process; adopt a risk analysis followed by an optimal allocation of risks among public and private players and, finally, organise ongoing monitoring by accountants.

Siemiatycki builds upon the earlier work on optimism bias of Flyvbjerg and others by presenting a corporate performance benchmarking approach. His paper explores whether innovative mechanisms of collecting and publicly disseminating information about the performance of government contractors on past projects can contribute to improving the success rate of future initiatives. Based on theory on optimism bias and drawing on international examples from North America, Europe and Asia, he found that the production and dissemination of greater information through benchmarking does not on its own lead to reductions in the prevalence of optimism biases. However, there is evidence that when combined with incentives built formally into government procurement processes that reward strong past performance, benchmarking can support improvements in the quality of project outputs.

In addition to these more general papers, the following papers are mainly case-oriented. In a case study from China, Mu, De Jong and Ten Heuvelhof focus on the importance of Public-Private Partnerships (PPPs) for the management of large transport infrastructure projects. They place this subject in the context of the tremendous growth in demand for mobility in emerging economies that has led to a gap between investment needs and available public funding, and emphasize the importance of strategic behaviour. They found evidence on various types of strategic behaviour in the management of expressways in China. In addition they reflect on possible cures, including penalties for collusion attempts proportional to the potential benefits of collusion and the option to insist on a broad range of bidders. Finally they reflect on the implications for Europe.

The paper of Leijten, Koppenjan, Ten Heuvelhof, Veeneman, and Van der Voort is a case-based study on how to deal with competing project management values under uncertainty. They use the Dutch case of RandstadRail, a regional rail line in the highly urbanized Western part of the Netherlands. Due to the uncertainty involved in many complex infrastructure engineering projects, it is not always possible for managers to establish detailed terms of reference at the outset of project development. In addition, a conflict of interest existed in the case at hand between the project management and the client's administrations. Using RandstadRail as an example, their paper shows the problems that may occur in such situations and how unmanageability arises. Lessons are derived with a view to developing better manageable practice. The authors warn against too strong a focus on transaction costs because this may threaten a sound balance between project management values. Another lesson is that non-objectifiable values such as quality and safety are more difficult to defend in value trade-offs than objectifiable ones, such as time and costs.

Osland and Strand's paper is on the politics and institutions of project approval and the importance of the theory of strategic misrepresentation for explaining miscalculations of costs and benefits in large infrastructure projects. The theory's major explanation of cost overruns is that the registration and representation of data and the calculations of costs and benefits are made by planners in organisations that have economic interests in the results – see also the paper of Cantarelli et al. in this special issue. Although Osland and Strand think the theory is helpful in understanding behaviour of specific actors, they conclude it has several shortcomings both in theoretical and methodological terms. Methodologically, they conclude the research does not have the design necessary for validating the conclusion of 'the survival of the unfittest'. Theoretically, the framework does not offer any variation on the institutional variable nor on variation in planners' (actors') motives and rationality. Hence, there is a need for a broader theoretical framework. Finally they sketch such a framework and apply it to Norwegian transport planning. The Norwegian research in this area does not support the thesis that project approval is a result of planners' strategic actions. More often it is an outcome of institutions where politicians play a key role at all levels and stages of the planning process, often neglecting planners' analyses and recommendations.

Peters' paper is a case study of the Berlin Tiergarten tunnel project (VZB) that consists of a joint planning approval procedure for one road and several rail tunnels (inter-city, metro rail and city subway). Her narrative case study traces the decision-making processes for this crucial post-Berlin Wall mega-project. It is structured around two central propositions related to mega-project decision-making, the first proposition being that 'giga-project' decisions create political and financial path dependencies and early 'points of no return' that often push forward even those elements of the bundle which would not have been built on their own. The second proposition is that, once the desired new infrastructure mega-projects are completed, the project promoters have an obvious interest and even public obligation to ensure that these are utilized as much as possible – even at the expense of other viable (and perhaps even preferable) alternatives. The paper raises important questions regarding optimistic forecasts, cost overruns, the role of prestige in large infrastructure projects, and the limits of public review procedures. It provides particular insights into a complex case where multiple urban transport mega-projects were bundled together for joint approval and implementation.

Finally, Salling and Banister present what they call the "CBA-DK decision support model for assessment of transport projects". Cost-benefit analysis is the state-of-the art methodology for *ex ante* project evaluations in many countries (Hayashi and Morisugi, 2000). The Danish model makes use of conventional cost-benefit analysis resulting in aggregated single point estimates. They then use quantitative risk analysis with Monte Carlo simulation to produce interval results. Two special concerns in this paper is, firstly, the treatment of feasibility risk assessment adopted for evaluation of transport infrastructure projects and, secondly, whether this can provide a more robust decision support model. The model builds upon earlier work of Flyvbjerg and others in the area of reference class forecasting and optimism bias. Salling and Banister conclude that a combination of conventional cost-benefit analysis and quantitative risk analysis examination can increase the decision-makers' possibility of making informed decisions. Another conclusion is that the CBA-DK decision support model results in more informed decision support for decision-makers and stakeholders in terms of accumulated descending graphs.

We hope the papers will contribute to a better understanding of cost overruns and demand shortfalls of large transport infrastructure projects, and the management and decision making of these projects. We realize that many more challenges remain. For instance, we need to better understand (a) why some projects are successful and whether success can be replicated, (b) geographical and sector differences in the performance of projects, (c) how to de-risk projects, (d) to evaluate experiments with methodological improvements and institutional arrangements that aim to improve current practice, (e) to develop better methods for *ex ante* assessment of the pros

and cons of large infrastructure projects, and finally (f) to further deepen theoretical contributions for explanations of cost overruns and demand shortfalls.

References

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